



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/068,871	02/11/2002	Lawson A. Wood	AW-19	2629
7590	01/11/2005		EXAMINER	
Lawson A. Wood 873 N. Frederick Street Arlington, VA 22205			WU, XIAO MIN	
			ART UNIT	PAPER NUMBER
			2674	

DATE MAILED: 01/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/068,871	WOOD, LAWSON A.
	<b>Examiner</b>	Art Unit
	XIAO M. WU	2674

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)  Responsive to communication(s) filed on 13 December 2004.

2a)  This action is **FINAL**.                    2b)  This action is non-final.

3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

4)  Claim(s) 1-8, 11 and 18-38 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5)  Claim(s) 31-33 and 37 is/are allowed.

6)  Claim(s) 1-8, 11, 18, 21, 22, 24-29, 34, 35 and 38 is/are rejected.

7)  Claim(s) 19, 20, 23, 30 and 36 is/are objected to.

8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

9)  The specification is objected to by the Examiner.

10)  The drawing(s) filed on \_\_\_\_\_ is/are: a)  accepted or b)  objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All b)  Some \* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)  Notice of References Cited (PTO-892)  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3)  Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4)  Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5)  Notice of Informal Patent Application (PTO-152)  
6)  Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/13/2004 has been entered.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-2, 4-6, 18, 21-22, 25-26, 28-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Gibbons et al. (US Patent No. 5,122,791).

As to claims 1, 4, 18, 21-22, 25, 28-29, Gibbons discloses a method for displaying a first color component (e.g. red) of an image described by video words for the first color component of a frame, the video words having bits with different bit ranks (col. 4, lines 18), the method comprising the steps of: (a) for each bit rank of the first color component of the frame, turning pixels of a spatial light modulator on or off in accordance with values of the video words for the respective bit rank (Fig. 2); (b) steadily exposing the spatial light modulator to light of the first color component during substantially the entire time that step (a) is conducted (e.g. 8Ig, 4Ig, 2Ig, Ig, Fig. 2), the light being generated by a light source(6-8, Fig. 1); and (c) driving the light

source at a first energy level for one of the bit ranks and at a substantially greater second energy level for another of the bit ranks (e.g. 8Ig is greater than 4Ig as shown in Fig. 2) Gibbons further discloses substantially steadily exposing the spatial light modulator to light that varies substantially in intensity as required in claim 4 (see Fig. 2). Gibbons also discloses a first one of the bit ranks (e.g. most significant bit for representing the highest light intensity level 8Ig) and a second one of the bit ranks (e.g. the second most significant bit for representing the second highest light intensity level 4Ig).

As to claims 2, 6, 26, Gibbons discloses that the spatial modulator is any LCD panel (col. 1, line 16.

As to claim 5, Gibbons discloses that the light has intensity at one moment that is at least about twice intensity at another moment (e.g. 8Ig is twice intensity of 4Ig, see Fig. 2).

4. Claims 34-35 are rejected under 35 U.S.C. 102(b) as being anticipated by Baldwin et al. (US Patent No. 5,986,640).

As to claim 34, Baldwin discloses a method for displaying a sequence of image described by video words, the video words having bits with different bit ranks, the method comprising the steps of: (a) exposing a spatial light modulator to light generated by a light source (Fig. 1); (b) displaying the bit ranks of the video words describing a given frame of the sequence on the spatial light modulator in a predetermined order (e.g. 16 in the first frame as shown in Fig. 4d); and (c) displaying the bit ranks of the video words describing the next frame of the sequence on the spatial light modulator in a different order (e.g. 8, 4, 2 in the second frame as shown in Fig. 4d)..

As to claim 35, Baldwin discloses varying the intensity of the light to which the spatial light modulator is exposed substantially (e.g. Fig. 4 shows the intensity level is varying).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3, 7, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gibbons et al. (US Patent No. 5,122,791) in view of Heimbuch et al. (US Patent No. 5,448,314).

As to claims 3, 7, 27, it is noted that Gibbons does not specifically disclose the spatial light modulator is a digital micromirror device. However, it is well known in the art that the DMD is one kind of the spatial light modulator and it is similar to liquid crystal display since they are both need light source. For example, Heimbuch is cited to teach a color DMD display device with a backlight light source (see Fig. 4). It would have been obvious to one of ordinary skill in the art to have substituted the DMD as taught by Heimbuch for the LCD of the Gibbons because they are alternative for each other. Furthermore, Gibbons as modified discloses discontinuously exposing the digital micromirror device to brief-duration flashes of light, the flashes having intensities that depend on the respective bit rank (e.g. in the most significant bit, the flash has intensity of 8Ig and in a next most significant bit, the flash has intensity of 4Ig, see Fig. 2).

7. Claims 8, 11, 24, 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heimbuch et al. (US Patent No. 5,448,314) in view of Marshall et al. (US Patent No. 5,706,061).

As to claims 8, 11, 24, 38, Heimbuch discloses a method for displaying an image described by video words of a frame, the video words having bits with different bit ranks (see Fig. 6), the method comprising the steps of: (a) for each bit ranks, turning pixels of a digital micromirror device on or off in accordance with values of the video words for the respective bit rank; and (b) discontinuously exposing the digital micromirror device to brief-duration flashes of light, the flashes having intensities that depend on the respective bit rank (see Figs. 7a, 7b). It is noted that Heimbuch discloses using a single light source and a color wheel for generating different color impinging on the digital micromirror device but fails to discloses using three light sources for generating different colors of light and impinging on the digital micromirror from different directions. Marshall is cited to teach a DMD device similar to Heimbuch. As shown in Fig. 9, Marshall discloses using three light sources (160, 162, 164) for generating different colors of light and impinging on the digital micromirror from different directions. It would have been obvious to one of ordinary skill in the art to have modified Heimbuch with the features of three light sources as taught by Marshall because the three color light sources are sequentially driven and are functional equivalents of the color wheel to provide colored light illuminating the spatial modulator (col. 4, lines 43-45).

***Allowable Subject Matter***

8. Claims 19, 20, 23, 30, 36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
9. Claims 31-33 and 37 are allowed.

***Response to Arguments***

10. Applicant's arguments filed 12/6/2004 have been fully considered but they are not persuasive.

With respect to claims 1 and 4, applicant argues that Gibbons's Fig. 2 shows that Gibbons's spatial light modulator is exposed to separate pulse of light for the different bit ranks and Gibbons neither discloses nor suggest "steadily exposing" a spatial modulator to light as different bit ranks of video words are displayed. This argument is not persuasive because the light source is behind the pixels and the pixels are steadily exposed to the light source. Furthermore, as shown in Fig. 2 of Gibbons, 8Ig and 4Ig, 2Ig and Ig are represented by most significant bit to least significant bit and they are different bit ranks.

With respect the newly amended claim 8 and newly added claims 25, 34 and 38, please see the new rejection above.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xiao Wu whose telephone number is (703) 305-4721.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Richard Hjerpe**, can be reached on (703) 305-4709.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**or faxed to:**

**(703) 872-9306**

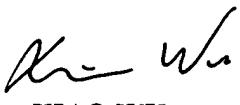
Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

Art Unit: 2674

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377

xw

January 7, 2005

  
**XIAO WU**  
**PRIMARY EXAMINER**  
**ART UNIT 2674**